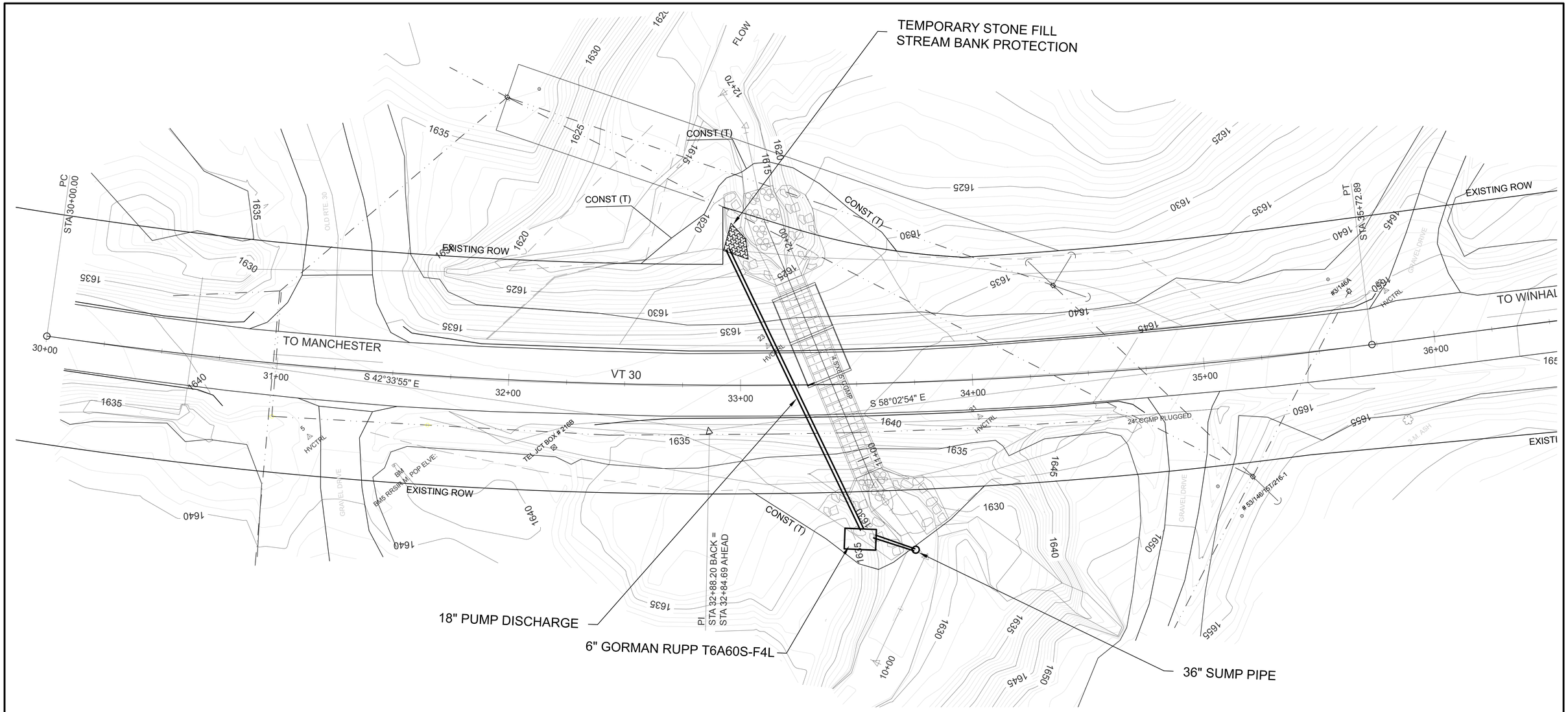


SEQUENCE OF OPERATION:

1. INSTALL PUMP DISCHARGE PIPE ACROSS ROUTE 30 AND SET UP BYPASS PUMP
2. INSTALL SUMP PIPE
3. PUMP WATER AROUND EXISTING CULVERT

NOTES:

THE INTENT OF THE STREAM DIVERSION IS TO UTILIZE THE EXISTING CULVERTS DURING A STORM EVENT IF THE FLOW GETS OVER 25 GPS AND THE PUMP CAN NOT KEEP UP. THE SUMP PIPE WILL BUILD A WATER LEVEL ENOUGH FOR THE PUMP SUCTION TO ADAQUATLY DRAW FROM. IF THE WATER SHOULD OVER TAKE THE SUMP PIPE IT WILL FLOW DOWN THE EXISTING CULVERT AS IT NORMALLY WOULD. WHEN WE HAVE SECTIONS OF THE NEW BOX INSTALLED THE EXISTING CULVERTS WILL BE MADE TO EXTEND INTO THE NEW CULVERT SO THE STREAM CAN CONTINUE ITS FLOW UNINTERUPTED.

AT TEN FEET OF LIFT THE 6" PUMP WILL HANDLE 25GPS, 3.34CFS WHICH IS GREATER THEN THE AVERAGE DAILY FLOW OF 2CFS. THE SUMP PIPE PROVIDES AN ADAQUATE POND TO DRAW FROM. THE DISCHAGE WILL BE ALLOWED TO FLOW GRAVITY BEFORE EXITING THE PIPE TO DISSAPATE THE WATER ENERGY ALONG WITH RIP RAP INSTALLED TO PREVENT SCOUR. FILTER BAGS WILL NOT BE USED FOR THIS OPERATION AS THE WATER THROUGH THE 6" PUMP IS EXPECTED TO DRAW AND DISCHARGE CLEAN. THE FILTER BAGS WILL BE USED FOR LOCALIZED PUMPING IN THE EXCAVATION.

STATE OF VERMONT
RONALD K. BELL
No. 6994
REGISTERED
PROFESSIONAL ENGINEER

BRIDGE 47 STREAM DIVERSION PLAN
SCALE 1" = 20'-0"

REV. NO.	DATE:
1	08/03/15

RENAUD BROS. INC.
283 FT. BRIDGEMAN RD. VERNON VT., 05354
PH. (802) 257-7585 FAX.(802) 257-7508

SHEET NAME: BRIDGE 47 STREAM DIVERSION PLAN
PROJECT NAME: WINHALL
PROJECT NO: STP CULV (31)
DRAWN BY: CE
CHK'D BY:
DATE: 06/22/2015
SHEET NO. 1
OF 1

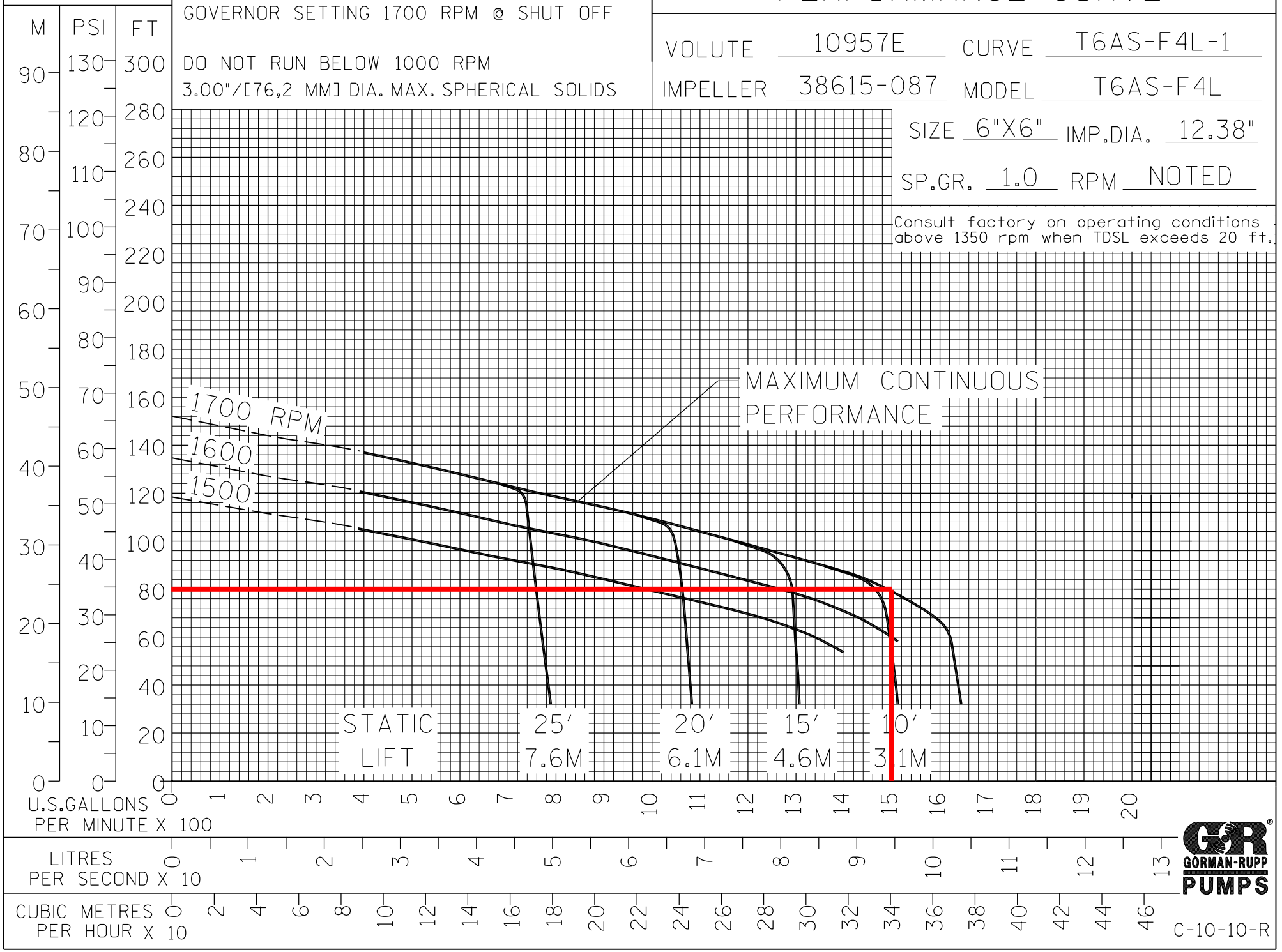
PERFORMANCE CURVE

DEUTZ D914L4 DIESEL ENGINE
GOVERNOR SETTING 1700 RPM @ SHUT OFF

DO NOT RUN BELOW 1000 RPM
3.00"/[76,2 MM] DIA. MAX. SPHERICAL SOLIDS

VOLUTE 10957E CURVE T6AS-F4L-1
IMPELLER 38615-087 MODEL T6AS-F4L
SIZE 6"X6" IMP.DIA. 12.38"
SP.GR. 1.0 RPM NOTED

Consult factory on operating conditions above 1350 rpm when TDSL exceeds 20 ft.



FILE NO. t6asf4l.s01

GORMAN-RUPP PUMPS

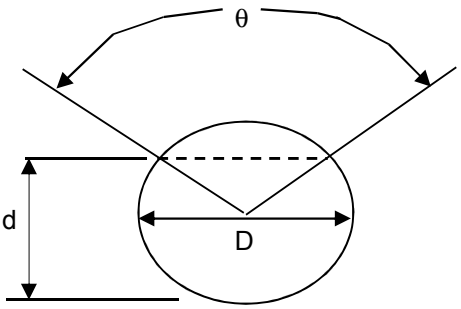
C-10-10-R

MANNING'S EQUATION FOR PIPE FLOW

Project:	Winhall STP CULV (31)	Location:	Bridge 47
By:	Charlie	Date:	8-6-2015
Chk. By:		Date:	

mdo version 12.8.00

Clear Data Entry Cells



INPUT

D=	72	inches
d=	16	inches
n=	0.025	mannings coeff
θ=	112.5	degrees
S=	0.065323	slope in/in

Mannings Formula

$Q=(1.486/n)AR_h^{2/3}S^{1/2}$

R=A/P

A=cross sectional area

P=wetted perimeter

S=slope of channel

n=Manning's roughness coefficient

$V=(1.49/n)R_h^{2/3}S^{1/2}$

Q=V x A

Solution to Mannings Equation				
Area,ft^2	Wetted Perimeter, ft	Hydraulic Radius, ft	velocity ft/s	flow, cfs
4.68	5.89	0.79	13.03	60.96

Manning's n-values	
PVC	0.01
PE (<9"dia)	0.015
PE (>12"dia)	0.02
PE(9-12"dia)	0.017
CMP	0.025
ADS N12	0.012
HCMP	0.023
Conc	0.013